

A Study of Thrombocytopenia in Pregnancy at a Tertiary Care Hospital

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DOI: [10.36348/sijog.2021.v04i10.006](https://doi.org/10.36348/sijog.2021.v04i10.006)

| Received: 12.09.2021 | Accepted: 18.10.2021 | Published: 21.10.2021

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Abstract

Background: Gestational thrombocytopenia (defined as a platelet count below $150 \times 10^9 /L$) occurs in 5% to 10% of pregnancies. Thrombocytopenia is the second leading cause of blood disorders in pregnancy after anemia. A low platelet count is often an incidental feature, but it might also provide a biomarker of a coexisting systemic or gestational disorder. Timely analysis is needed to determine the primary cause of thrombocytopenia, and appropriate therapy should then be selected to effectively improve the prognosis of the pregnancy. Hypertensive disorders accounts for 33% of all the cases of thrombocytopenia in pregnancy. **Methods:** The study was conducted at a tertiary institute over a period of one year, from April 2020 to March 2021. This is a retrospective study of indoor patients admitted with the low platelets in the department of obstetrics and gynecology at Smt. Kashibai Navale Medical College and General Hospital. All Pregnant women with platelet count less than $150 \times 10^9 /L$ were included in the study. **Results:** Most of the cases presented during 34-38 weeks of gestation. The most common etiology of thrombocytopenia at our place was found to be pregnancy induced hypertension. **Conclusions:** Thrombocytopenia in pregnancy may occur secondary to a variety of causes. Most of these cases occur during specific periods of gestation. Thrombocytopenia in pregnancy if timely diagnosed do not cause any mortality, however management of these patients require a multidisciplinary approach and close collaboration between obstetrician, physician, and neonatologist.

Keywords: Platelet, Thrombocytopenia, Pregnancy induced hypertension.

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INTRODUCTION

Thrombocytopenia is one of the most common hematologic complications of pregnancy and is caused by various causes. There is a physiological decrease in platelet count during normal pregnancy due to hemodilution, increased consumption in peripheral tissue and increased aggregation (higher levels of thromboxane A₂). The physiological thrombocytopenia of pregnancy is mild and has no adverse effects for the mother and fetus. The most common aetiology is pregnancy-associated thrombocytopenia, also known as gestational thrombocytopenia. It accounts for 65% to 80% of the cases [1], followed by idiopathic thrombocytopenia and hypertensive disorder in pregnancy (PIH). Other less common causes of thrombocytopenia in pregnancy include coagulopathy related to sepsis/disseminated intravascular coagulation (DIC), microangiopathic hemolytic anemia with thrombotic thrombocytopenic purpura and kidney injury. Severe thrombocytopenia in pregnancy increases the risk of postpartum hemorrhage, neonatal asphyxia, and neonatal thrombocytopenia.

A low platelet count is often an incidental feature, but it might be associated with coexisting systemic or gestational disorder. At times it may require maternal intervention or treatment that might pose harm to the fetus. Platelet counts may fall during pregnancy and mothers may require treatment prior to the delivery. Thrombocytopenia, defined as blood platelet count below $150 \times 10^9 /L$ is the second leading blood disorders in pregnancy after anemia. It complicates 7 to 10% of all pregnancies [2].

Hypertensive disorders accounts for 33% of all the cases of thrombocytopenia in pregnancy. Thrombocytopenia can be classified as mild (platelet count of $100-150 \times 10^9 /L$), moderate (platelet count of $50-100 \times 10^9 /L$) or severe (platelet count $< 50 \times 10^9 /L$) [3]. Spontaneous bleeding may occur with less than $20 \times 10^9 /L$ and the risk of internal bleeding is increased if the platelet count falls below $10 \times 10^9 /L$ [4]. Preeclampsia is by far the most common cause of thrombocytopenia associated with thrombotic microangiopathies (TMA) presenting in the late second or in

the third trimester of pregnancy. Infrequently, Preeclampsia with associated thrombocytopenia may develop during the first week postpartum, although even more delayed presentations have been reported. Approximately 50% of women with Preeclampsia develops mild thrombocytopenia with platelet counts generally above $100 \times 10^9 /L$ unless there are superimposed complications. Although the pathogenesis of thrombocytopenia is uncertain, it is reported that extracellular vesicles shed by syncytiotrophoblasts from Preeclampsia placentas may augment platelet activation, which, in turn, release soluble factors and extracellular vesicles that might contribute to placental and systemic microvascular ischemia [5, 6].

Possibility of Immune Thrombocytopenia due to auto immune disorders should always be enquired in past history preceding to pregnancy [7].

METHOD

The study was conducted in the department of obstetrics and gynecology at Smt. Kashibai Navale Medical College and General Hospital over a period of one year, from April 2020 to March 2021. This was a retrospective study of the indoor patients whose data was collected from the record section.

Samples Collection

Blood platelet count was done according to method of Brecher and Cronkite as advocated by Dacie and Lewis. 63 Blood samples were collected by aseptic venipuncture with disposable plastic syringes, mixed with EDTA, and then sucked up to 0.5 mark in the WBC pipette. Tip of the pipette was then gently wiped with dry cotton. Diluent fluid (1% ammonium oxalate, which helps in RBC lysis) was drawn up to mark 11 to obtain a 1 in 20 dilutions.

Platelet Count

The improved Neubauer's chamber was charged in the usual manner after removal of the diluents in the stem. The platelets were then allowed to settle down for 20 minutes by placing the charged hemocytometer in a Petri dish with a piece of wet filter paper. The count was done in 1 mm² area under high power of light microscope with restricted light entering it. Thus, if N be the number of platelets counted in an area of 1 mm² (0.1μL in volume), the number of platelet per liter of blood = $N \times 200 \times 10^6 / L$.

Inclusion Criteria: All pregnant women with platelet count less than $150 \times 10^9 /L$ were included in the study.

Exclusion Criteria: Any pregnant women with covid infection were excluded from the study.

Although the study was done during the period when entire nation was battling against the covid 19 infection, we have excluded the covid positive pregnant patients as the bleeding event due to covid needs to be studied separately and our data was collected from the non covid pregnant patients.

RESULTS

In the study period of one year, 539 patients delivered out of which 63 (11.68%) pregnant women were found to be thrombocytopenic. Out of 63 patients, 21 had pregnancy induced hypertension, 15 had gestational thrombocytopenia, 12 diagnosed with dengue, 06 had tropical splenomegaly, 03 had HELLP syndrome, 3 had Idiopathic thrombocytopenic purpura and out of these 1 patient was splenectomised (Figure-1). Out of the 63 pregnant women who were thrombocytopenic 28.57% had mild thrombocytopenia. Most of them 52.38% were moderate thrombocytopenia and remaining 19.05 % had severe thrombocytopenia (Table 1). Most of these cases presented during 34-38 weeks of gestation. The most common etiology in this study was found to be pregnancy induced hypertension (33.33%) followed by gestational thrombocytopenia (23.80%).

In our study 6 patients (9.5%) required MICU care and platelet transfusion and close monitoring for bleeding symptoms. These were the maternal near miss events (9.5%). Rest all were observed in high dependency unit and responded to conservative management. There was no maternal mortality in this study which may be attributed to timely admission and management of the patients and availability of ICU and blood components around the clock.

There was single incidence of neonatal thrombocytopenia. Neonatal thrombocytopenia is seen in patient with immune thrombocytopenia, in which antiplatelet antibodies are transferred to the fetus through the placenta. Rest all neonates had normal platelet count at birth. We need to follow up these patients to study any possibility of recurrence in subsequent pregnancy.

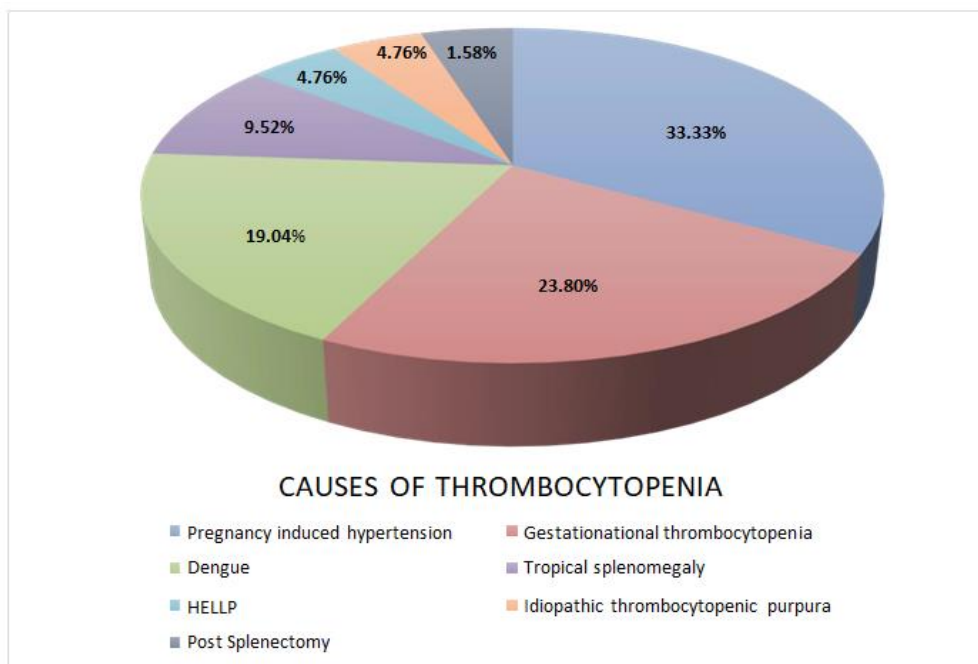


Figure 1

Table 1: Severity of Thrombocytopenia among Pregnant women

THROMBOCYTOPENIA (platelet count)	No. of cases	Percentage (%)
Mild ($100-150 \times 10^9 /L$)	18	28.57
Moderate ($50-100 \times 10^9 /L$)	33	52.38
Severe ($<50 \times 10^9 /L$)	12	19.05
Total	63	100

DISCUSSION

This study found no influence of age and religion on the prevalence of thrombocytopenia in pregnancy which was similar to a study by Mathews *et al.*, [9] In a study by Parnas M *et al.*, the most important etiological factors for thrombocytopenia are gestational thrombocytopenia accounting for 59.3% followed by hypertensive disorders 21.1% [10]. In our study, the most common etiology was pregnancy induced hypertension. Often maternal and fetal outcomes are good [11, 12] if symptomatically managed with platelet transfusion the platelet count returns to normal within 2–12 weeks postpartum [8, 13, 14].

Thrombocytopenia in PIH is mainly due to vascular endothelial ischemia and hypoxia caused by vascular vasospasm; vascular viscosity increases with damaged endothelial cells, thereby increasing permeability and accelerating platelet aggregation and consumption [15]. A majority of these pregnant women require timely termination of their pregnancy according to their obstetric situation, and this situation results in a high proportion of preterm birth and cesarean sections. Maayan-Metzger *et al.*, conducted a retrospective study of 723 pregnant women with thrombocytopenia and verified this conclusion [16].

Limitation of the study

This study was performed at a single center on a limited number of patients. To make any inference we need to conduct multicentric study on a large group of patient.

CONCLUSION

Thrombocytopenia in pregnancy may occur secondary to a variety of causes. Most of these cases occur during third trimester of pregnancy. On occasion patients may present with constellation of symptoms. The challenge to the clinician is to weigh the risks of maternal and fetal bleeding complications against the benefits of diagnostic tests and intervention. Management of pregnant women with platelet disorders requires multidisciplinary approach and close collaboration between obstetrician, neonatologist and physician.

ACKNOWLEDGEMENTS

I am very thankful to this institute Smt.Kashibai Navale Medical College and General Hospital, Pune, Maharashtra, India for supporting this research work, and for providing insight and expertise that greatly assisted the research, although they may not agree with all of the interpretations/conclusions of this paper.

I am also immensely grateful to all my colleagues for their comments on an earlier version of the manuscript, although any errors are my own and should not tarnish the reputations of the institute.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Taken from the Institutional Ethics Committee.

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